

AMENDMENTS TO THE CLAIMS

Please amend the claims as follows.

1. (Currently Amended) A data transmission apparatus for performing data communication based on optical transmission, comprising:

a transmitting unit for converting and sending electric communication data to be transmitted into optical communication data;

a photoelectric conversion circuit for receiving said optical communication data and converting said received optical communication data into received electric communication data; and

a variable setting unit for setting said photoelectric conversion circuit to generate received electric communication data in response to an input level of said received optical communication data,

wherein said photoelectric conversion circuit comprises:

a light receiving unit for generating a current based on said received optical communication data; and

a current supply for generating a reference current; and

a comparator for comparing a current, the value of which indicates a magnitude of said current generated by said light receiving unit, with [[a]] said reference current generated by said current supply, and for generating said received electric communication data,

and wherein said variable setting unit comprises a variable current supply for setting said photoelectric conversion circuit by adding a predetermined current to said reference current or by subtracting a predetermined current from the current, the value of which indicates the magnitude of said current generated by said light receiving unit.

2. (Currently Amended) The data transmission apparatus as claimed in claim 1, wherein said photoelectric conversion circuit further comprises:

~~a light receiving unit for generating a current based on said received optical communication data; and~~

a signal generating unit for generating said received electric signal communication data based on said current generated by said light receiving unit,

wherein said variable setting unit comprises a variable current supply for setting said photoelectric conversion circuit by subtracting a predetermined current value from a current value indicating a magnitude of said current generated by said light receiving unit.

3. (Canceled).

4. (Previously Presented) The data transmission apparatus as claimed in claim 1 further comprising:

a plurality of said transmitting units;

a plurality of optical waveguides for propagating pieces of said optical communication data sent from said transmitting units respectively;

a plurality of said photoelectric conversion circuits corresponding to said transmitting units respectively;

a plurality of variable setting units corresponding to said plurality of photoelectric conversion circuits for setting respective photoelectric conversion circuit to generate predetermined electric communication data in response to an input level of said received optical communication data.

5. (Previously Presented) The data transmission apparatus as claimed in claim 1, wherein said variable setting unit sets said photoelectric conversion circuit based on a transmission delay time of said optical communication data and electric communication data between said corresponding transmitting unit and photoelectric conversion circuit.

6. (Previously Presented) The data transmission apparatus as claimed in claim 5, further comprising at least one optical waveguide for transmitting said optical communication data, wherein said variable setting unit sets said photoelectric conversion circuit further based on attenuation of said optical communication data in said optical waveguide.
7. (Previously Presented) The data transmission apparatus as claimed in claim 6, wherein said variable setting unit sets said photoelectric conversion circuit further based on an electro-optic conversion efficiency of said corresponding transmitting unit with regard to said electric communication data.
8. (Previously Presented) The data transmission apparatus as claimed in claim 7, wherein said variable setting unit sets said photoelectric conversion circuit further based on an photoelectric conversion efficiency of said corresponding photoelectric conversion circuit with regard to said optical communication data.
9. (Currently Amended) ~~The data transmission apparatus as claimed in claim 2,~~ A data transmission apparatus for performing data communication based on optical transmission, comprising:
- a transmitting unit for converting and sending electric communication data to be transmitted into optical communication data;
 - a photoelectric conversion circuit for receiving said optical communication data and converting said received optical communication data into received electric communication data; and
 - a variable setting unit for setting said photoelectric conversion circuit to generate received electric communication data in response to an input level of said received optical communication data,
- wherein said photoelectric conversion circuit comprises:
- a light receiving unit for generating a current based on said received optical communication data; and

a signal generating unit for generating said received electric communication data based on said current generated by said light receiving unit,

a comparator for comparing a current, the value of which indicates a magnitude of said current generated by said light receiving unit, with a reference current, and for generating said received electric communication data,

and wherein said variable setting unit comprises a variable current supply for setting said photoelectric conversion circuit by adding a predetermined current to said reference current or by subtracting a predetermined current from the current, the value of which indicates the magnitude of said current generated by said light receiving unit,

wherein said optical communication data is digital data, and said variable current supply subtracts a current value, which is substantially half said current generated by said light receiving unit when said optical communication data indicates H logic, from said current value generated by said light receiving unit.

10. (Currently Amended) ~~The data transmission apparatus as claimed in claim 2,~~ A data transmission apparatus for performing data communication based on optical transmission, comprising:

a transmitting unit for converting and sending electric communication data to be transmitted into optical communication data;

a photoelectric conversion circuit for receiving said optical communication data and converting said received optical communication data into received electric communication data; and

a variable setting unit for setting said photoelectric conversion circuit to generate received electric communication data in response to an input level of said received optical communication data,

wherein said photoelectric conversion circuit comprises:

a light receiving unit for generating a current based on said received optical communication data; and

a signal generating unit for generating said received electric communication data based on said current generated by said light receiving unit,

a comparator for comparing a current, the value of which indicates a magnitude of said current generated by said light receiving unit, with a reference current, and for generating said received electric communication data,

and wherein said variable setting unit comprises a variable current supply for setting said photoelectric conversion circuit by adding a predetermined current to said reference current or by subtracting a predetermined current from the current, the value of which indicates the magnitude of said current generated by said light receiving unit,

wherein said optical communication data is digital data, and said variable current supply subtracts a substantially average current value of the current generated by said light receiving unit when said optical communication data indicates H logic and the current generated by said light receiving unit when said optical communication data indicates L logic, from said current value indicating said magnitude of said current generated by said light receiving unit.

11. (Currently Amended) ~~The data transmission apparatus as claimed in claim 1,~~ A data transmission apparatus for performing data communication based on optical transmission, comprising:

a transmitting unit for converting and sending electric communication data to be transmitted into optical communication data;

a photoelectric conversion circuit for receiving said optical communication data and converting said received optical communication data into received electric communication data; and

a variable setting unit for setting said photoelectric conversion circuit to generate received electric communication data in response to an input level of said received optical communication data,

wherein said photoelectric conversion circuit comprises:

a light receiving unit for generating a current based on said received optical communication data; and

a comparator for comparing a current, the value of which indicates a magnitude of said current generated by said light receiving unit, with a reference current, and for generating said received electric communication data,

and wherein said variable setting unit comprises a variable current supply for setting said photoelectric conversion circuit by adding a predetermined current to said reference current or by subtracting a predetermined current from the current, the value of which indicates the magnitude of said current generated by said light receiving unit,

wherein said optical communication data is digital data, and said variable current supply adds a current value, which is substantially half said current generated by said light receiving unit when said optical communication data indicates H logic, to a value of said reference current.

12. (Currently Amended) ~~The data transmission apparatus as claimed in claim 1,~~ A data transmission apparatus for performing data communication based on optical transmission, comprising:

a transmitting unit for converting and sending electric communication data to be transmitted into optical communication data;

a photoelectric conversion circuit for receiving said optical communication data and converting said received optical communication data into received electric communication data; and

a variable setting unit for setting said photoelectric conversion circuit to generate received electric communication data in response to an input level of said received optical communication data,

wherein said photoelectric conversion circuit comprises:

a light receiving unit for generating a current based on said received optical communication data; and

a comparator for comparing a current, the value of which indicates a magnitude of said current generated by said light receiving unit, with a reference current, and for generating said received electric communication data,

and wherein said variable setting unit comprises a variable current supply for setting said photoelectric conversion circuit by adding a predetermined current to said reference current or by subtracting a predetermined current from the current, the value of which indicates the magnitude of said current generated by said light receiving unit,

wherein said optical communication data is digital data, and said variable current supply adds a substantially average current value of the current generated by said light receiving unit when said optical communication data indicates H logic and the current generated by said light receiving unit when said optical communication data indicates L logic, to a value of said reference current.

13. (Previously Presented) The data transmission apparatus as claimed in one of claims 1-2 and 4-10, wherein said transmitting unit comprises:

a laser diode for generating said optical communication data based on said electric communication data; and

a bias current supply for supplying a bias current larger than a laser oscillation threshold current of said laser diode to said laser diode.

14. (Previously Presented) A test apparatus for testing an electronic device, comprising:

a pattern generating unit for generating a test signal to test said electronic device;

a waveform adjusting unit for adjusting said test signal;

a test head for contacting said electronic device;

a data transmission apparatus for transmitting data between said waveform adjusting unit and said test head; and

a judging unit for judging quality of said electronic device based on an output signal outputted by said electronic device in response to said test signal,

wherein said data transmission apparatus comprises:

a transmitting unit for converting and sending said test signal into optical communication data;

a photoelectric conversion circuit for receiving said optical communication data and converting said received optical communication data into said test signal; and

a variable setting unit for setting said photoelectric conversion circuit to generate a predetermined test signal in response to an input level of said received optical communication data,

wherein said photoelectric conversion circuit comprises:

a light receiving unit for generating a current based on said received optical communication data; and

a comparator for comparing a current, the value of which indicates a magnitude of said current generated by said light receiving unit, with a reference current, and for generating said test signal,

and wherein said variable setting unit comprises a variable current supply for setting said photoelectric conversion circuit by adding a predetermined current to said reference current or by subtracting a predetermined current from the current, the value of which indicates the magnitude of said current generated by said light receiving unit.

15. (Currently Amended) A photoelectric conversion circuit for receiving light and converting said received light into an output electricity, comprising:

a photodiode for generating a current based on said received light; and

a variable current supply for generating a current to offset said current generated by said photodiode, wherein said output electricity is obtained directly by subtracting the offset current from said current generated by said photodiode, or by adding the offset current to said current generated by said photodiode;

a current supply for generating a reference current; and

a comparator for comparing a current, the value of which indicates a magnitude of said current generated by said photodiode, with said reference current generated by said current supply.

16. (New) The test apparatus as claimed in claim 14, wherein said reference current is generated by a current supply.

17. (New) The test apparatus as claimed in claim 14, further comprising:

a laser diode for generating data; and

a plurality of optical waveguides for propagating data.

18. (New) A data transmission apparatus for performing data communication based on optical transmission, comprising:

a plurality of transmitting units for converting to-be-transmitted electric communication data into, and sending to-be-transmitted electric communication data as, optical communication data;

a plurality of optical waveguides for propagating pieces of said optical communication data sent from said transmitting units respectively;

a plurality of photoelectric conversion circuits corresponding to said plurality of transmitting units respectively for receiving said optical communication data and

converting said received optical communication data into received electric communication data; and

a plurality of variable setting units corresponding to said photoelectric conversion units respectively for setting said plurality of photoelectric conversion circuits to generate received electric communication data in response to an input level of said received optical communication data,

wherein each of said plurality of transmitting units comprises:

a laser diode for generating said optical communication data based on said to-be-transmitted electric communication data; and

a bias current supply for supplying a bias current larger than a laser oscillation threshold current of said laser diode to said laser diode,

wherein each of said plurality of photoelectric conversion circuits comprises:

a light receiving unit for generating a current based on said received optical communication data; and

a converting unit that generates said received electric communication data based on said current generated by said light receiving unit,

wherein each of said plurality of variable setting units sets a corresponding photoelectric conversion circuit of said plurality of photoelectric conversion circuits by adding or subtracting a predetermined current value that is calibrated in advance from a current value indicating magnitude of said current generated by said light receiving unit.

19. (New) The data transmission apparatus as claimed in claim 18, wherein each of said plurality of photoelectric conversion circuits further comprises a signal generating unit for generating said received electric communication data based on said current generated by said light receiving unit, and each of said plurality of variable setting units comprises a variable current supply for setting said corresponding photoelectric conversion circuit by

subtracting a predetermined current value from a current value indicating a magnitude of said current generated by said light receiving unit.

20. (New) The data transmission apparatus as claimed in claim 18, wherein each of said plurality of variable setting units sets said corresponding photoelectric conversion circuit based on a transmission delay time of said optical communication data and electric communication data between said corresponding transmitting unit and photoelectric conversion circuit.
21. (New) The data transmission apparatus as claimed in claim 20, further comprising at least one optical waveguide for transmitting said optical communication data, wherein each of said plurality of variable setting units sets corresponding photoelectric conversion circuit further based on attenuation of said optical communication data in said at least one optical waveguide.
22. (New) The data transmission apparatus as claimed in claim 21, wherein each of said plurality of variable setting units sets corresponding photoelectric conversion circuit further based on an electro-optic conversion efficiency of said corresponding transmitting unit with regard to said electric communication data.
23. (New) The data transmission apparatus as claimed in claim 22, wherein each of said plurality of variable setting units sets said corresponding photoelectric conversion circuit further based on an photoelectric conversion efficiency of said corresponding photoelectric conversion circuit with regard to said optical communication data.
24. (New) The data transmission apparatus as claimed in claim 19, wherein said optical communication data is digital data, and said variable current supply subtracts a current value, which is substantially half said current generated by said light receiving unit when said optical communication data indicates H logic, from said current value generated by said light receiving unit.

25. (New) The data transmission apparatus as claimed in claim 19, wherein said optical communication data is digital data, and said variable current supply subtracts a substantially average current value of the current generated by said light receiving unit when said optical communication data indicates H logic and the current generated by said light receiving unit when said optical communication data indicates L logic, from said current value indicating said magnitude of said current generated by said light receiving unit.
26. (New) The data transmission apparatus as claimed in claim 18, wherein said optical communication data is digital data, and said variable current supply adds a current value, which is substantially half said current generated by said light receiving unit when said optical communication data indicates H logic, to a value of a reference current.
27. (New) The data transmission apparatus as claimed in claim 18, wherein said optical communication data is digital data, and said variable current supply adds a substantially average current value of the current generated by said light receiving unit when said optical communication data indicates H logic and the current generated by said light receiving unit when said optical communication data indicates L logic, to a value of a reference current.
28. (New) The data transmission apparatus as claimed in claim 18, wherein each of said photoelectric conversion circuit further comprises a comparator for comparing a current, the value of which indicates a magnitude of said current generated by said light receiving unit, with a reference current, and for generating said received electric communication data.
29. (New) The data transmission apparatus as claimed in claim 28, wherein the reference current is generated by a reference current supply.
30. (New) The data transmission apparatus as claimed in claim 18, wherein each of said plurality of photoelectric conversion circuit further comprises a signal generating unit for generating said received electric communication data based on said current generated by said light receiving unit.